

Fact Sheet:

RAMS GRASS Interface (RGI)

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(LL 5)

The Problem

Corps of Engineers (COE) Districts regulate activities conducted on and near wetlands and navigable waterways through the issuance, modification, and denial of permits based on an assessment of activities' environmental impacts. This regulation requires the evaluation and tracking of thousands of permit applications annually and an assessment of both the individual and cumulative effects of proposed projects in multiple-permitted areas on natural, cultural, and economic resources. It also requires that agencies coordinate their environmental review of these activities. Effective regulation relies on the development of techniques and models for the analysis and management of environmental data and on the accurate assessment by Corps District personnel of multiple data sources, which frequently depict data at different scales, different resolutions, and in different formats. Such techniques and models are needed to adequately and rapidly assess activities subject to Corps regulatory jurisdiction.

The Technology

The RAMS-GRASS Interface (RGI) is an X Windows-based interface linking the Regulatory Analysis and Management System (RAMS) with the Geographic Resources Analysis Support System (GRASS). RAMS is a relational data base management system (RDBMS) containing data relevant to the Corps permit

assessment process. Developed by Applied Systems Consultants, Inc. (ASCI) for the Baltimore COE District, RAMS is used by Districts and their field offices to track and manage permit applications and to provide regulatory information needed by Corps Divisions and the Office of the Chief of Engineers (OCE). RAMS is a sequential query language (SQL)-based DBMS, written in Informix SQL and ESQL-C and in the "C" programming language and capable of running on a wide variety of UNIX platforms.

GRASS is an image processing and geographic information system (GIS) used to display, manipulate, and analyze spatial data sets. It has the capabilities needed to analyze and model interactions among environmental data and those needed to integrate the diverse spatial data elements (including U.S. Fish and Wildlife Service wetlands data, satellite imagery, Soils Conservation Service soils data, Bureau of the Census population data, and U.S. Geological Survey digital line graph and digital elevation models) required to evaluate the physical and cultural landscape features of a permit application site. GRASS, developed by researchers at the U.S. Army Construction Engineering Research Laboratories (CERL), runs on essentially the same UNIX platforms as RAMS and also is written in "C." GRASS includes a set of functions that allows users to query, extract, and manipulate data stored in Informix data bases (like RAMS) and to produce new GIS data layers based on the results of these data base queries and manipulations. Both RAMS and GRASS are Corps-owned, public domain systems. Districts also use other DBMSs and GISs to manage and analyze regulatory data.

Benefits/Savings

RAMS facilitates the tracking of Corps-regulated activities and the generation of statistical data on impacted areas. The system speeds processing of permit applications by automating required steps, provides a data base of record usable to generate needed reports, and provides access to data sets used to evaluate the environmental impacts of proposed regulatory actions. An integrated RAMS-

GRASS package provides the integrated spatial analysis and data base management functions required for timely permit management and evaluation.

Status

The RGI prototype is now undergoing beta testing at several Corps Districts and is planned for general distribution by CERL subsequent to testing and incorporation of needed changes. It is being tested for its ability to provide the integrated spatial data base management functions needed by Corps regulators to rapidly evaluate the impacts of actions subject to Corps regulatory jurisdiction. This link will facilitate the analysis of environmental impacts associated with Corps-regulated activities, mitigation techniques, and policies. A separate, longer term redesign effort, modifying the RAMS data base structure and District-specific user interfaces, also is being undertaken at CERL. This effort will streamline and standardize the data base, reduce system training requirements, modularize the system structure to accommodate future changes, enable District data on environmental impacts to be elicited, make the system more independent of any specific SQL software, and facilitate RAMS-GIS integration. New GRASS software is also planned for development to facilitate future GRASS-RDBMS links and increase the functionality of such linked systems. Future software upgrades of RGI will reflect these system changes.

Points of Contact

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